Fire Safety Audit Report

XXXXX XXXXX Bank Ltd.

XXX, XXXXXX, XXXXX.

By

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Executive Summary:

1. XXXXXX branch is G + 4 storied building. This building is owned by XXXX XXXXX Bank Ltd.

2. It is advised that copies of necessary statutory permissions should be kept in the branch. (If available)

3. As per Fire prevention and Life safety act 2006 – Government of Maharashtra, the premises being a commercial building, fall in classification E; it is advisable to follow useful provisions of category "Business building type E 3". (Most of the provisions do not exist at present as they were not mandatory before 2006). Bank may decide to adopt maximum provisions in the interest of occupants.

4. Emergency Exit door on every floor along with alternate exit paths are provided. Emergency exit doors should not be locked during working hours.

5. Additional Fire extinguishers of adequate capacity and of suitable type may be provided at strategic locations. Bank may think about providing Fire blankets.

6. Proper ventilation should be provided for batteries installed in LT room to avoid hydrogen hazards.

7. Additional smoke detectors may be provided in recommended areas.

8. Evacuation plan, training of occupants, Caution boards, and mock fire drills should be undertaken immediately.

FIRE SAFETY AUDIT REPORT

1) Premises audited and address

XXXXXX XXXXXX Bank,
XXX, XXXXXX,
XXXXXX, XXXXXXX.

This is a building with Ground + 4 floors. Branch is on ground floor, which has about 9' height. First & second floor has loan department & monitoring section respectively. A secretarial section is located on X floor whereas X^{th} floor houses board meeting room and chairman's cabin. **The total building height is above 15 meters.** Basement area is also in use for storage of records and locker room.
Total building area as informed by HO is 11748 Sqft

The occupancy is approximately 60 bank employees and 40 to 50 customers at any point of time

2) Compliance Requirements about Fire safety:

This building come under the category of 'Business building' as per Schedule 1 of Maharashtra Fire prevention and Life safety measures act 2006. B**usiness buildings come under Schedule E, where act ask for specific fire prevention measures.**

Following table gives extract of **Schedule 1 of Maharashtra Fire prevention and Life safety measures act 2006 for building type E3.** This table gives statutory requirement of fire safety equipment to be installed at site.

Type of building	**Fire Alarm and Protection system components required**									**Water supply in liters**		**Pump Capacity in Ltrs with pressure 0.3N/mm2**	
Business building type E 3 – Above 15 Meters & up to 24 meter in height.	Fire Extinguisher	Hose Reel	Dry Riser	Wet Riser	Down Comer	Yard Hydrant	Auto Sprinkler	Manual Electric Fire Alarm	Auto Fire detection and alarm system	U/G Static storage	Terrace Tank	Pump Near U/G	Pump near tank
	R	R	NR	R	NR	R	R	R	R	100000	10000	1800	NR

If this building is constructed before 2006, the statutory compliances and approvals for the same as above were not mandatory. It is advised that now these compliances should be obtained in the interest of all occupants, bank property and valuable data. Bank has taken some majors by providing smoke detectors and fire alarm system and fire extinguishers at strategic locations. Installation of auto sprinklers may be difficult at present as they may require alteration in interior.

3) The construction and interior of premises occupied by bank has following features.

a. Main doors at all floors are made up of glass whereas internal doors at each floor along with emergency exits are made up of wood.
b. Cabinets, office table and chairs are made up of wood
c. All the rooms of office and basement locker area are provided with electricity and telephone connections.
d. Distribution boards on … floor are housed in wooden cupboard.
e. The furniture is made up of wood.
f. Major office equipments are computers, printers, Scanners.
g. Main LT panel, UPS's and their batteries are installed in same room on … floor.

4) Following services are provided in the building

a. Telephone lines
b. Electric connections
c. Water line
d. Gas cylinder for pantry.

5) Audit Objective

The objective of this audit is to examine Fire Prevention and Safety of the bank premises. The procedure is to assess different dimensional aspects of building with the view to critically examine the fire prevention and fighting arrangements for its proper implementation.

6) Major requirements of training.

A fire can cause huge loss of life and property in a very short time, so it is extremely important that all concerned must know the prevention and fighting measures. Some salient requirements are as follows.

a. Duties of Staff
b. Action to be taken on out-break of fire
c. Means of Escape
d. Specified Assembly Area
e. Action after the fire been extinguished.

7) Recommended good practices for reducing the hazard

a) To reduce the impact and possibility of fire, the building must be designed as per fire safety regulations.
b) Smoke detectors should be provided in main LT room & at basement area.
c) The building should be provided with emergency exit signs, isolation of equipment and materials that could cause a fire or explosion if exposed to fire.
d) Staircase should be provided with both side railing & anti-skid mats for steps.
e) Emergency lights should be provided at staircases & all corridors.
f) Fire retardant or Passive Fire Protections in the form of building materials such as paints / coatings should be used to coat and impregnate combustible materials.

g) The importance of increasing public understanding of the cause of fire and of "Learning effective reaction in the event of fire is essential for successful fire prevention program''

8) Observations made during audit:

a. ……. Floor:

i. **Smoke Detectors are provided at** ……. floor corridors, Bank Manager's cabin, Cashier cabin, Administration Account counters, Customer, Reception area.

ii. Fire blanket and proper signage is not available in front of each door. *(A fire blanket is a safety device designed to extinguish incipient (starting) fires. It consists of a sheet of a fire retardant material which is placed over a fire in order to smother it. ... Fire blankets, along with fire extinguishers, are fire safety items that can be useful in case of a fire.)*

iii. Emergency exit i.e. spiral staircase is provided at each floor. The staircase needs immediate attention for cleaning/housekeeping. Unwanted material stored in between should be removed.

iv. Assembly point is not specified in the building. *(Assembly point is a designated place where people have been told to wait after evacuating a building in the event of a fire or other emergency.)*

v. All areas should have signage's indicating do's and don'ts during a fire incidence.

vi. **Smoke Detectors are NOT provided at** locker room. Remote areas like …… need smoke detection as most of the time no body may be present in these areas.

vii. Fire alarm switch and fire extinguisher is available near the door. But fire extinguishers provided are not sufficient.

viii. Fire Alarm is placed properly that everybody in the building can hear the alarm.

ix. Occupants are not adequately trained about the firefighting, first aid & CPR.

x. Emergency lights are not provided in the stairs & corridors.

xi. Entry door at ….. floor is opening inside. For better utilization of space under emergency, this door should be opening outside.

xii. Barricading is not provided around 'well' at basement area. Storage of broken florescent tubes was observed at basement.

b. …… Floor:

i. **Smoke Detectors are NOT provided in** LT room. There should be provision of smoke detectors in LT room which houses main electrical panel, UPS, batteries & UPS distribution panels.

ii. **Smoke Detectors are NOT provided in** file storage cabinet room.

iii. In LT panel room, UPS battery terminals are not provided with suitable caps. These batteries are of "Wet electrolyte type" and they release hydrogen. Accidental overcharge (Possible due to defective battery charger in UPS) can release excess hydrogen, which is explosive and needs to be exhausted. This room should be provided with proper exhaust. (Hydrogen detectors are also

available in the market). This room has a ABC type fire extinguisher at present, we recommend DCP type / Co2 type for this room. Waste papers, files etc should not be kept in this room.

iv. All other strategic places may have ABC type fire extinguishers.

v. At present emergency exits is locked. It is advised to keep this door open during working hours.

vi. Emergency door is opening inside. For better utilization of space under emergency, this door should be opening outside.

vii. Stair case railing should be provided on both sides.

viii. There is fuel for fire like combustible material in each room and offices in the form of wood, thermopile and plastic material which is classified as class ''A'' fire hazard.

ix. Do's & Don'ts are not provided in the lift. Such instructions should be provided to achieve personal safety.

x. Fire extinguisher is not provided in file storage room.

xi. Occupants are not adequately trained about the firefighting, first aid & CPR.

xii. Fire alarm switch and fire extinguisher is available near the door. But fire extinguishers provided are not sufficient.

xiii. All areas should have signage's indicating do's and don'ts during a fire incidence.

c. ……. Floor

i. **Smoke Detectors & fire extinguisher** are not provided at data center.

ii. Fire blanket and proper signage is not available in front of each door.

iii. Fire alarm switch and fire extinguisher is available near the door. But fire extinguishers provided are not sufficient.

iv. Fire Alarm is in place properly but is maintained by different agency which may be difficult to synchronize with other floor system in case of emergency.

v. Occupants are not adequately trained about the firefighting, first aid & CPR.

vi. Emergency lights are not provided in the stairs & corridors.

vii. All areas should have signage's indicating do's and don'ts during a fire incidence.

viii. At present emergency exits is locked. It is advised to keep this door open during working hours.

ix. Emergency door is opening inside. For better utilization of space under emergency, this door should be opening outside.

x. Stair case railing should be provided on both sides.

d. ……. Floor

i. Smoke Detectors & fire extinguisher are not provided on some part of floor area.

ii. Fire blanket and proper signage is not available in front of each door.
iii. Fire alarm switch and fire extinguisher is available near the door. But fire extinguishers provided are not sufficient.
iv. At present emergency exits is locked. It is advised to keep this door open during working hours.
v. Emergency door is opening inside. For better utilization of space under emergency, door opening should be outside.
vi. Stair case railing should be provided on both sides.
vii. Emergency lights are not provided in the stairs & corridors.
viii. All areas should have signage's indicating do's and don'ts during a fire incidence.
ix. Occupants are not adequately trained about the firefighting, first aid & CPR.

e. …….. Floor

i. **Smoke Detectors & fire extinguisher** are provided in **Board room. But it does not have emergency exit.**
ii. Fire blanket and proper signage is not available in front of each door.
iii. Fire alarm switch and fire extinguisher is available near the door. But fire extinguishers provided are not sufficient.
iv. At present emergency exits is locked. It is advised to keep this door open during working hours.
v. Emergency door is opening inside. For better utilization of space under emergency, this door should be opening outside.
vi. Stair case railing should be provided on both sides.
vii. Emergency lights are not provided in the stairs & corridors.
viii. All areas should have signage's indicating do's and don'ts during a fire incidence.
ix. Occupants are not adequately trained about the firefighting, first aid & CPR.

f. Fire extinguisher is not provided in pantry located on terrace floor.

9 Recommendations:

a. Emergency door should always be opening outside. It is advised that all emergency exits should be kept open during working hours.
b. For basement floor, alternate emergency exits shall be provided.
c. Unwanted material stored at basement area, emergency staircase & in LT room should be removed.
d. Staircase shall be equipped with both side railing & anti-skid mats for steps.
e. Smoke detectors shall be provided at paper files storage room, Main LT room & basement area.

f. Four CO2 and one DCP fire extinguishers should be provided.
g. UPS Battery terminals should be provided with caps. UPS room should have exhaust arrangement.
h. Emergency lights shall be provided at staircases & corridors.
i. Basement locker rooms exhaust fans should be made operational.
j. Evacuation procedure should be planned properly. Quarterly evacuation mock drills shall be practiced.
k. Fire - fighting, first aid & CPR training shall be provided to staff.

10 Planning an Evacuation procedure:

The following issues need to be considered when planning an evacuation procedure for occupants:

a. Identify the number of staff and occupants and their location in the building.
b. Develop Emergency Evacuation Plans. Identify a leader who will execute the same. A standby leader also may be developed.
c. Consult with External experts regarding preparation of the plan.
d. Consider the condition of the building
e. Decide the duties for all persons responsible for mitigation of any emergency.
f. Identify what needs to be done when it is not possible to evacuate people immediately. e.g. stilt floor.
g. Safe evacuation of all staff and customers is the responsibility of the bank. It is advised to follow above instructions to develop the necessary procedure.

Annexure 1:
All You Ever Wanted to Know About Fire Extinguishers . . .

Different types of fire, respective fuel types and recommended suppression technique.			
Symbol	**Description of what gets burnt**	**Class of Fire and extinguisher**	**Recommended suppression technique.**
	Combustible materials (wood, paper, fabric, refuse)	Class A	Most suppression techniques
	Flammable liquids	Class B	Inhibiting chemical chain reaction, such as dry chemical or Halon
	Flammable gases	Class C	Inhibiting chemical chain reaction, such as dry chemical or Halon
	Flammable metals	Class D	Specialist suppression required
	Electrical fire	Class E/C	As ordinary combustibles, but conductive agents like water not to be used
	Cooking oils and fats	Class F / K	Suppression by removal of oxygen or water mist

There are basically four different types or classes of fire extinguishers, each of which extinguishes specific types of fire as shown in above table. The label on the fire extinguisher is the UL rating. The UL rating is broken down into Class A and Class B:C ratings. These numerical ratings allow you to compare the relative extinguishing effectiveness of various fire extinguishers.

For example, an extinguisher that is rated 4A:20B:C indicates the following:

1. The A rating is a water equivalency rating. Each A is equivalent to 1 1/4 gallons of water. 4A = 5 gallons of water.
2. The B:C rating is equivalent to the amount of square footage that the extinguisher can cover, handled by a professional. 20 B:C = 20 square feet of coverage.
3. C indicates it is suitable for use on electrically energized equipment.

When analyzing these ratings, note there is not a numerical rating for Class C or Class D fires. Class C fires are essentially either a Class A or a Class B fire involving energized electrical equipment where the fire extinguishing media must be non-conductive. The fire extinguisher for a Class C fire should be based on the amount of the Class A or Class B component.

For extinguisher use on a Class D fire, the relative effectiveness is detailed on the extinguisher nameplate for the specific combustible metal fire for which it is recommended.

Fire Extinguisher Ratings Class A Extinguishers will put out fires in ordinary combustibles, such as wood and paper. The numerical rating for this class of fire extinguisher refers to the amount of water the fire extinguisher holds and the amount of fire it will extinguish.
Class B Extinguishers should be used on fires involving flammable liquids, such as grease, gasoline, oil, etc. The numerical rating for this class of fire extinguisher states the approximate number of square feet of a flammable liquid fire that a non-expert person can expect to extinguish.

Class C Extinguishers are suitable for use on electrically energized fires. This class of fire extinguishers does not have a numerical rating. The presence of the letter C indicates that the extinguishing agent is non-conductive.

Class D Extinguishers are designed for use on flammable metals and are often specific for the type of metal in question. There is no picture designator for Class D extinguishers. These extinguishers generally have no rating nor are they given a multi-purpose rating for use on other types of fires.

Class K Extinguishers are used on fires involving cooking media (fats, grease, and oils) in commercial cooking sites such as restaurants. These fire extinguishers work on the principle of saponification. Saponification takes place when alkaline mixtures, such as potassium acetate, potassium citrate, or potassium carbonate, are applied to burning cooking oil or fat. The alkaline mixture combined with the fatty acid creates soapy foam on the surface that holds in the vapors and steam and extinguishes the fire. These extinguishers are identified by the letter K and are designed for use on flammable metals and are often specific for the type of metal in question.

Types of Fire Extinguishers

Dry Chemical extinguishers
These are usually rated for multiple purpose use. They contain an extinguishing agent and use a compressed, non-flammable gas as a propellant.

Halon extinguishers
These contain a gas that interrupts the chemical reaction that takes place when fuels burn. These types of extinguishers are often used to protect valuable electrical equipment (Say server room) since they leave no residue to clean up. Halon extinguishers have a limited range, usually 4 to 6 feet. The initial application of Halon should be made at the base of the fire, even after the flames have been extinguished.

Water based extinguishers

These extinguishers contain water and compressed gas and should only be used on Class A (ordinary combustibles) fires.

Carbon Dioxide (CO2) extinguishers
These are most effective on Class B and C (liquids and electrical) fires. Since the gas disperses quickly, these extinguishers are only effective from 3 to 8 feet. The carbon dioxide is stored as a compressed liquid in the extinguisher; as it expands, it cools the surrounding air. The cooling will often cause ice to form around the horn where the gas is expelled from the extinguisher. Since the fire could re-ignite, continue to apply the agent even after the fire appears to be out.

How to Use a Fire Extinguisher
Even though extinguishers come in a number of shapes and sizes, they all operate in a similar manner.
Here's an easy acronym for fire extinguisher use:

P A S S -- Pull, Aim, Squeeze, and Sweep

- **Pull the pin** at the top of the extinguisher that keeps the handle from being accidentally pressed.
- **Aim the nozzle** toward the base of the fire. Stand approximately 8 feet away from the fire.
- **Squeeze the handle** to discharge the extinguisher. If you release the handle, the discharge will stop.
- **Sweep the nozzle** back and forth at the base of the fire and slowly move forward to extinguish the remaining fire.

After the fire appears to be out, watch it carefully since it may re-ignite!

Location of fire extinguishers
The International Fire Code and OSHA require that owners/employers select and distribute fire extinguishers based on the classes of anticipated workplace fires and also on the size and degree of the hazard that would affect their use.

The following chart contains requirements for classes of fires and travel distance to an extinguisher.

Fire Class	Travel Distance
Class A	75 feet (22.9 m) or less
Class B	50 feet (15.2 m)
Class C	Based on appropriate A or B Hazard
Class D	75 feet
Class K	Within 30 feet of commercial cooking equipment

- Extinguishers need to be conspicuously located and available in the case of fire.
- They also should be located along normal paths of travel and near exits.
- Portable fire extinguishers that are not wheeled should be installed on the hanger or bracket supplied or placed in cabinets or wall recesses.
- The locations of fire extinguishers must be identified so they are readily available to employees without subjecting them to injury.
- Height requirements for mounting extinguishers depend on the weight of the unit. If the unit weighs less than 40 pounds, it should be installed so the top of the extinguisher is no more than 5 feet above the floor. If the unit weighs more than 40 pounds, it should be installed so the top of the extinguisher is no more than 3.5 feet above the floor. At no point should the extinguisher be less 4 inches from the floor.
- Training needs - Where the employer has provided fire extinguishers for employee use, the employer must provide an educational program to familiarize employees on the principles and use of the extinguishers.
- This educational program should be completed during the initial hiring and annually thereafter.

Inspections

Portable fire extinguishers must be visually inspected monthly. The inspection should assure that:

- Fire extinguishers are in their assigned place.
- Fire extinguishers are not blocked or hidden.
- Fire extinguishers are mounted in accordance with NFPA Standard No. 10 (Portable Fire Extinguishers)
- Pressure gauges show adequate pressure (a CO_2 extinguisher must be weighed to determine whether leakage has occurred)
- Pin and seals are in place
- Fire extinguishers show no visual sign of damage or abuse
- Nozzles are free of blockage.

Maintenance requirements

- Maintenance, inspection, and testing of an extinguisher are the responsibility of the employer.
- Maintenance should be done at least annually or more often if conditions warrant.
- The employer shall record the annual maintenance date and keep these records for one year after the recorded date or the life of the shell of the extinguisher.
- Hydrostatic testing of portable fire extinguishers is done to protect against unexpected in-service failure. This can be caused by internal corrosion, external corrosion, damage from abuse, etc.